Clinical Vignette

Cisplatin Nephrotoxicity in a Patient with Nasopharyngeal Carcinoma

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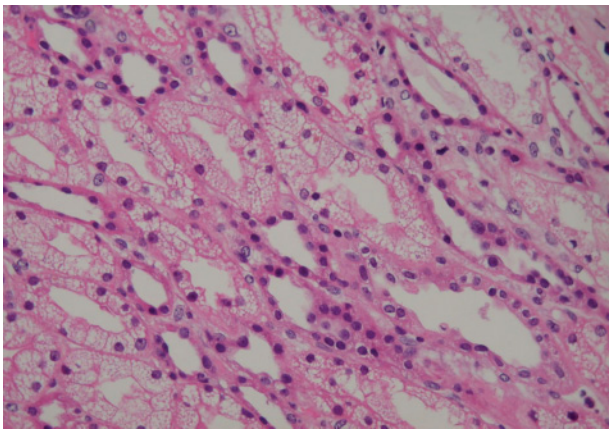
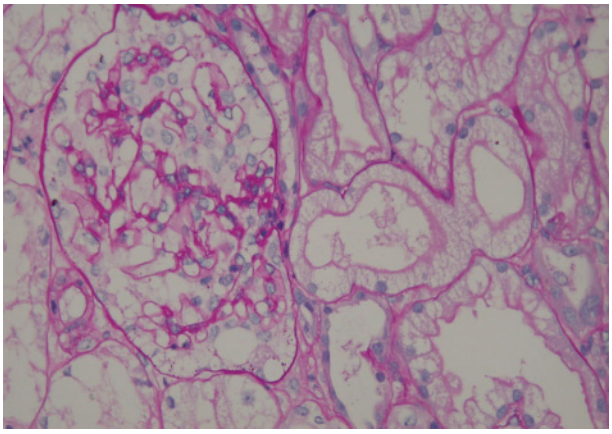
A 43-year-old lady with nasopharyngeal carcinoma was treated with neoadjuvant chemotherapy, consisting of cisplatin and 5-fluorouracil. Pretreatment serum creatinine was 59 μmol/L. On day 12 of chemotherapy, she was found to be hypotensive and anuric. Renal function tests showed serum potassium levels of 5.8 mmol/L, urea of 22.5 mmol/L, and creatinine of 474 μmol/L. Renal biopsy showed swelling and fine vacuolation of the proximal tubular cells, whereas the distal tubular cells showed regenerative changes (Panel A). The interstitium showed focal and sparse infiltrate of lymphocytes and few plasma cells. There was minimal tubular atrophy and interstitial fibrosis. The viable glomeruli and the vessels appeared unremarkable (Panel B). Her renal function recovered spontaneously after 1 week of hemodialysis.

Cisplatin is an alkylating agent and has been used in the treatment of various solid tumors. Nephrotoxicity is one of its major dose-limiting adverse effects, especially when hydration is inadequate. In our patient, dehydration due to severe mucositis predisposed her to cisplatin nephrotoxicity. Cisplatin is preferentially absorbed by proximal tubular cells, which explains the predominant site of renal injury in this particular area. The histologic features of cisplatin nephrotoxicity mimics those of osmotic nephrosis, which are mostly reported in patients receiving hyperosmolar fluids such as iodinated contrast media, mannitol, plasma expanders containing hydroxyethyl starch, and intravenous immunoglobulin infusion.



Panel A



Panel B